



ICAO ENGINE EXHAUST EMISSIONS DATA SHEET

SUBSONIC ENGINES

ENGINE IDENTIFICATION: RB211-535E4 BYPASS RATIO: 4.1
 UNIQUE ID NUMBER: 1RR014 PRESSURE RATIO (π_{co}): 25.4
 COMBUSTOR:
 ENGINE TYPE: MTF RATED THRUST (F_{oo}) (kN): 176.1

REGULATORY DATA **** DATA SUPERSEDED **** SEE FOLLOWING UID FOR REVISED DATA: **3RR028**

CHARACTERISTIC VALUE:	HC	CO	NO _x	SMOKE NUMBER
D _p /F _{oo} (g/kN) or SN	2.6	32.6	84.6	2.0
AS % OF ORIGINAL LIMIT	13.3	27.6	93.1	9.8
AS % OF CAEP/2 LIMIT (NO _x)			116.4	
AS % OF CAEP/4 LIMIT (NO _x)			141.8	
AS % OF CAEP/6 LIMIT (NO _x)			161.1	
AS % OF CAEP/8 LIMIT (NO _x)			193.8	

DATA STATUS

- PRE-REGULATION
 - CERTIFICATION
 x REVISED (SEE REMARKS)

TEST ENGINE STATUS

- NEWLY MANUFACTURED ENGINES
 x DEDICATED ENGINES TO PRODUCTION STANDARD
 - OTHER (SEE REMARKS)

EMISSIONS STATUS

x DATA CORRECTED TO REFERENCE
 (ANNEX 16 VOLUME II)

CURRENT ENGINE STATUS

(IN PRODUCTION, IN SERVICE UNLESS OTHERWISE NOTED)
 x OUT OF PRODUCTION (DATE: -)
 - OUT OF SERVICE (DATE: -)

MEASURED DATA

MODE	POWER SETTING (%F _{oo})	TIME (minutes)	FUEL FLOW (kg/s)	EMISSIONS INDICES (g/kg)			SMOKE NUMBER
				HC	CO	NO _x	
TAKE-OFF	100	0.7	1.860	0.04	1.01	52.70	
CLIMB OUT	85	2.2	1.510	0.01	1.23	36.20	
APPROACH	30	4.0	0.570	0.04	1.71	7.50	
IDLE	7	26.0	0.190	1.00	15.44	4.30	
LTO TOTAL FUEL (kg) or EMISSIONS (g)			711	307	5134	13633	-
NUMBER OF ENGINES				1	2	2	2
NUMBER OF TESTS				3	5	5	5
AVERAGE D _p /F _{oo} (g/kN) or AVERAGE SN (MAX)				1.7	28.6	76.9	1.7
SIGMA (D _p /F _{oo} in g/kN, or SN)				0.1	3.5	1.3	0.3
RANGE (D _p /F _{oo} in g/kN, or SN)				1.59-1.77	24.6-33.4	75-78.9	1.5-2.3

ACCESSORY LOADS

POWER EXTRACTION 0 (kW) AT - POWER SETTINGS
 STAGE BLEED 0 (% CORE FLOW) AT - POWER SETTINGS

ATMOSPHERIC CONDITIONS

BAROMETER (kPa)	100.8-101.2
TEMPERATURE (K)	285-298
ABS HUMIDITY (kg/kg)	0.0058-0.0087

FUEL

SPEC	AVTUR
H/C	1.91
AROM (%)	20

MANUFACTURER: Rolls-Royce plc
 TEST ORGANIZATION: Rolls-Royce Ltd
 TEST LOCATION: SINFIN-Derby
 TEST DATES: 02/07/1984-01/04/1991

REMARKS

1. HC data remeasured.

Compliance with Fuel Venting requirements: - ('x' if complies, 'PR' if pre-regulation, '-' if information is not available)